

**HIGH PEAK CURRENT DENSITY  
RESONANT TUNNELING DIODE**

**ABSTRACT OF THE DISCLOSURE**

5 A resonant tunneling diode is produced in a  
gallium arsenide material system formed with barrier layers  
of AlGaAs with a quantum well layer of low band-gap  
material between them. The material of the well is  
selected to adjust the second energy level to the edge of  
the conduction band in GaAs, with a preferred quantum well  
10 layer formed of InGaAs. The resonant tunneling diode  
structure is grown by a metal organic chemical vapor  
deposition process on the surface of the nominally exact  
(100) GaAs substrate. Layers of doped GaAs may be formed  
on either side of the multilayer resonant tunneling diode  
15 structure, and spacer layers of GaAs may also be provided  
on either side of the barrier layers to reduce the  
intrinsic capacitance of the structure.